

NON-PUBLIC?: N
ACCESSION #: 8910170199
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Surry Power Station, Unit 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000281

TITLE: Reactor Trip Due to Low Steam Generator Level Following a Higher
Than Expected Load Increase During Unit Startup
EVENT DATE: 09/19/89 LER #: 89-010-00 REPORT DATE: 10/13/89

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 025

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: M. R. Kansler, Station Manager TELEPHONE: (804) 357-3184

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On September 19, 1989 with Unit 2 Reactor Power at 25%, shortly after placing Unit 2 on line, an automatic reactor trip was generated at 0051 hours as a result of a lo lo steam generator level. A four hour non-emergency report was made to the Nuclear Regulatory Commission (NRC) at 0120 hours per 10CFR50.72. A rapid turbine load increase occurred during startup which led to oscillations in the steam generator (S/G) water levels, eventually leading to the lo lo S/G water level trip. The cause of the rapid turbine load increase was the operator raising the governor valve position limiter more rapidly than desired. The operators performed the appropriate emergency procedures, and quickly stabilized the unit following the reactor trip. The lessons learned from this event and subsequent unit startup have been disseminated to all operations personnel.

END OF ABSTRACT

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1.0 Description of the Event

On September 19, 1989 with Unit 2 Reactor Power at 25%, shortly after placing Unit 2 on line, an automatic reactor trip was generated at 0051 hours. The reactor trip signal was the result of a lo lo steam generator level on the "B" Steam Generator (S/G) (EHS-HX). A higher than expected turbine load increase occurred which caused transients in the Reactor Coolant (RCS) (EHS-AB) temperature, steam flows, and S/G levels. These oscillations could not be controlled by the startup operations team and resulted in the lo lo S/G level trip.

Following the trip, all safety systems functioned as designed. The auxiliary feedwater (EHS-BA) pumps automatically started on the lo lo S/G levels as designed and restored S/G levels to normal. Due to the low reactor decay heat input and the use of auxiliary feedwater, the RCS continued to cooldown to 534 degrees Fahrenheit. The cooldown necessitated closing the main steam trip valves (EHS-ISV) about four minutes after the trip.

A four hour non-emergency report was made to the Nuclear Regulatory Commission (NRC) at 0120 hours per 10CFR50.72.

2.0 Safety Consequences and Implications

During this event, the turbine and reactor protection systems and auxiliary feedwater system functioned as designed. In addition, plant safety systems remained operable, and all plant parameters remained well within the bounds of the accident analyses. Therefore, the health and safety of the public were not affected.

3.0 Cause

Control of S/G water level at low power levels during unit startup is a generic problem with Westinghouse pressurized water reactors. The rapid turbine load

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increase resulted in automatic closure of the main steam dump valves. This resulted in a rapid reduction in total steam flow and led to the oscillations in the S/G water levels eventually leading to the lo lo S/G water level trip. The cause of the rapid turbine

load increase was determined to be operator induced. The licensed operator controlling the turbine raised the governor valve position limiter at a faster than desirable rate while the limiter was controlling turbine load which resulted in the ensuing transient.

4.0 Immediate Corrective Action(s)

The operators performed the appropriate emergency procedures and quickly stabilized the unit following the reactor trip. Also, the shift technical advisor performed the critical safety function status trees review to ensure specific plant safety parameters were noted, and that those parameters remained within safe bounds.

5.0 Additional Corrective Action(s)

Technicians performed checks on the turbine load control system as a precautionary measure. Specifically, the load rate settings were checked to ensure proper response. No problems were found. The operations startup team discussed the event and ways to prevent recurrence prior to restart. Reactor criticality was achieved on September 19 at 0801 hours.

6.0 Action(s) Taken to Prevent Recurrence

The lessons learned from this event and subsequent unit startups have been disseminated to all operations personnel. Additional guidance provided from these lessons will be incorporated into the turbine generator startup procedures to ensure that the turbine generator is loaded slowly after initially placing the unit on line.

An engineering study for installation of feedwater bypass and narrow-range steam flow indications has been placed under review for possible implementation in the 1990 capital budget plan.

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7.0 Similar Events

Unit 1 LER 85-002. A S/G lo lo level reactor trip and auxiliary feedwater actuation occurred during unit startup with power at 20%.

Unit 2 LER 85-013. With the unit at 22% power, a S/G hi hi level resulted in a turbine trip followed by a reactor trip, feedwater isolation and auxiliary feedwater actuation.

Both these events occurred due to the inherent difficulties with

manual S/G water level control during plant startup.

8.0 Manufacturer/Model Number(s)

N/A

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VIRGINIA ELECTRIC AND POWER COMPANY

Surry Power Station

P.O. Box 315

Surry, Virginia 23883

October 13, 1989

U. S. Nuclear Regulatory Commission Serial No.: 894A5

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Washington, D.C. 20555 License Nos.: DPR-37

Gentlemen:

Pursuant to Surry Power Station Technical, Specifications, Virginia Electric and Power Company hereby submits the follow " Licensee Event Report for Unit 2.

REPORT NUMBER

89-010-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be reviewed by Safety Evaluation and Control.

Very truly yours,

M. R. Kansler
Station Manager

Enclosure

cc: Regional Administrator
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